

# SPECIFICATION

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## 15 TITLE OF INVENTION

PICTURE DISPLAY SYSTEM

## CROSS-REFERENCE TO RELATED APPLICATIONS

20           Not Applicable

## STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

## 25 REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISK APPENDIX

Not Applicable

## BACKGROUND

This invention relates to a picture display system that can hold a plurality of pictures in a variety of different configurations.

Conventional picture frames are used to display and protect a variety of objects including photographs, pictures, drawings, diplomas, signs and a variety of other objects. In the description herein, the term picture is intended to generically cover all of these objects.

The average family possesses many pictures that have been accumulated over years. Some of these pictures find their way into albums and some are placed in frames, but the vast majority of them are stored unorganized in envelopes and shoeboxes where they are rarely seen. Even pictures that are stored in albums are rarely seen even though they are more organized than those stored in envelopes and shoeboxes.

Given the growing popularity of digital photography, individuals are generating even more pictures than ever before. As a result there is a growing need for alternative ways to display pictures irrespective of how they've been created.

The reasons the majority of pictures are never displayed are many, but some of them are related to the alternatives available in the marketplace.

Firstly there's the barrier of cost. Even though there are low cost individual frames, the cost of framing a collection of photographs quickly escalates. Also, the use of individual frames very quickly results in clutter.

Secondly there's the barrier of inconvenience. Many frames are not user friendly and require a great amount of patience to properly position a picture in them.

There are a variety of frames that display multiple pictures and are well known to the art. By way of example, in wall mounted frames, there are frames which can be classified as a collage frames. Another example well known to the art, are individual frames which are joined together using hinges. This type of frame can be used as the freestanding frame or mounted on to a wall.

Although there are currently a variety of frames that display multiple pictures available on the market, there is an ongoing need for simpler and more cost-effective solutions that provide consumers the opportunity to display pictures they possess.

Accordingly, it is an object of the present invention to provide improved picture display alternatives.

## SUMMARY OF THE INVENTION

5 According to the invention, there is provided a display sleeve to hold a plurality of picture modules. Pictures are placed in the picture modules and then the picture modules in turn slide into a display sleeve. The system makes it quick and easy to rearrange the order of pictures and replace pictures. There are a number of base and auxiliary elements that can be easily interchanged in a diversity of combinations and  
10 permutations to devise an assortment of goods that have a similar appearance but that also have distinct differences and unique features.

The display sleeve has different shapes depending on the particular application. Furthermore, display sleeves can be used in both singular and plural modes. For example, in one embodiment, a display sleeve can function alone as a free standing  
15 entity. In another embodiment a plurality of display sleeves are supported on a special purpose stand. And in yet another embodiment a plurality of display sleeves can be physically linked together using accessory elements to create a wall collage effect.

The display sleeves can also serve as a subcomponent to create a larger assemblage on a separate substrate. For example two individual three picture sleeves  
20 can be permanently fastened to a backer board to create a picture plaque. The backer board can be simply finished or have thematic graphics printed on the front. Examples of themes for the graphics applied to the backer board are team sports, growing up and special occasions.

The invention does not reside solely in any of the individual base or auxiliary  
25 components alone but also with how they function together as herein disclosed and claimed.

For a better understanding of the invention, reference should be made to the accompanying drawing and descriptive matter in which there are illustrated preferred embodiments of the invention.

## BRIEF DESCRIPTION OF THE DRAWINGS.

The invention will be described with reference to the accompanying drawings in which:

- 5      **Figure 1** is an exploded view of a preferred embodiment of the of the picture module;
- Figure 2 shows the profile of a preferred embodiment of the mounting clip;
- Figure 3 shows the profile of a second preferred embodiment of the mounting clip;
- 10     **Figure 4** is an exploded view of a second preferred embodiment of the of the picture module;
- Figure 5 is a plan view of a preferred embodiment of the mounting picture carrier;
- Figure 6 is a perspective view of the mounting picture carrier shown in Figure 5 with the picture placed in it;
- 15     **Figure 7** shows the profile of a preferred embodiment of the display sleeve;
- Figure 8 is a perspective exploded view of the display sleeve shown in Figure 7 with the picture modules placed in it to form a display module;
- Figure 9 is a perspective view of the display module shown in Figure 8 is used in combination with a display stand;
- 20     **Figure 10** is an exploded view of the display module shown in Figure 8 is used in combination with a display stand;
- Figure 11 is a plan view of a preferred embodiment of the display stand shown in Figure 9 and Figure 10;
- 25     **Figure 12** is a perspective view of the display stand shown in Figure 11 folded into a structural three dimensional form;
- Figure 13 shows the profile of a second preferred embodiment of the display sleeve;
- Figure 14 is a perspective view of the display sleeve shown in Figure 13 with the picture modules placed in it to form a display module;
- 30     **Figure 15** is a perspective view of an assemblage of wall mounted display sleeves;

Figure 16 is a side view of the assemblage of wall mounted display sleeves shown in Figure 15;

Figure 17 is a detail view showing a preferred method of support at the top of the assemblage of wall mounted display sleeves shown in Figure 16;

5       Figure 18 is a detail view showing a preferred method of interconnection between display sleeves in the assemblage of wall mounted display sleeves shown in Figure 16;

Figure 19 shows the profile of a preferred embodiment of the wall support;

10      Figure 20 shows the profile of a preferred embodiment of the partition panel support;

Figure 21 shows the profile of a third preferred embodiment of the display sleeve;

Figure 22 shows the profile of a preferred embodiment of the display sleeve connector;

15      Figure 23 shows the profile of a fourth preferred embodiment of the display sleeve;

Figure 24 is a perspective exploded view of the display sleeve shown in Figure 23 with the picture modules placed in it to form a display module and shown wall mounted;

20      Figure 25 shows the profile of a fifth preferred embodiment of the display sleeve;

Figure 26 is a perspective exploded view of the display sleeve shown in Figure 25 with the picture modules placed in it to form a display module and shown wall mounted;

Figure 27 is a perspective view of a sixth preferred display sleeve with the picture modules placed in it to form a display module;

25      Figure 28 is a front view of a preferred assemblage of display sleeves pre-mounted on a graphic panel;

## DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to the drawings where like numerals have been used to describe like parts and in particular to Figure 1, there is shown a preferred embodiment of the picture module 31A that is comprised of a mounting panel 35 and two mounting clips 33 which secure a picture 37 to the mounting panel.

The mounting panel 35 serves two purposes; it supports and protects the picture. The dimensions of the mounting panels can be of any size as required by the pictures to be displayed. It has been found that materials such as glass or plastics such as acrylic or copolyester are ideal materials to use for making the mounting panels.

5       The mounting clips 33 serve to conveniently secure the picture flat against the mounting panel in the correct alignment and in a manner that doesn't damage the picture in any way and that can be easily reversed to allow easy changing of the picture. It also functions to conceal the edges of the mounting panel and picture that are not otherwise concealed. As a result the mounting panel can be slightly larger than the picture which is  
10 attached to it. This allows the system to handle pictures that vary in size without having to modify the pictures.

The mounting clip is intended to be reusable and therefore must be made out of a material that can be used to create a spring like clamping force without breaking. Extruded rigid PVC has been found to possess the required properties. The mounting clip  
15 can also be injection moulded from a plastic such as ABS. Properly treated aluminum extrusions and roll formed steel can also be used to achieve the required properties.

Referring next to **Figure 2**, there is shown the profile of one preferred embodiment of the mounting clip 33A with equal legs. The profile of the mounting clip is generally of an elongated U-shape with the two legs angled towards one another. The two  
20 legs are slightly angled away from each other at their unattached ends to form guide lips 39. The guide lips serve to prevent tearing of the picture. At their closest point, the distance between the two legs is slightly less than the thickness of the mounting panel. The base of the retainer clip may strain relieve grooves 41 that are thinner than the nominal thickness of the profile to reduce the strain and chance of material failure at these  
25 points. The length of the mounting clip generally matches the length of the vertical side of the mounting panel.

Referring next to **Figure 3**, there is shown the profile of second preferred embodiment of the mounting clip 33B with unequal legs. It is similar to the first preferred embodiment of the mounting clip except that only one side 39 is angled away while the  
30 opposing side 43 is shorter and not angled at its end. This embodiment of the mounting

clip is useful for situations where a flush appearance is desired although it is not as user friendly.

Referring next to **Figure 4**, there is shown a second preferred embodiment of the picture module **31B**. It is identical to the first preferred embodiment shown in **Figure 1** as described above, but with the addition of a picture carrier the **45**. The picture carrier **45** makes it possible to use pictures with different orientations adjacent to one another in the system. The picture carrier also provides a means to provide an alternative appearance for the system.

Referring next to **Figures 5 and 6**, there is shown the picture carrier **45**.

Heavyweight colored paper stock is an ideal material to use for the picture carrier. A score **49** is located at the midpoint and perpendicular to its longest side. To one side of the score are slots **47** through the thickness of the material and angled at 45 degrees to the perimeter edges are spaced the proper distance to receive a predetermined picture size such as 4 inches by 6 inches. To the other side of the score is an opening **51**. The slots **45** and opening **51** are positioned such that when the picture carrier is folded along the score **49** a picture **37** that is retained by the slots is centered and visible through the opening **51**. The opening **51** can be any configuration required, for example it could be an oval shape instead of a rectangle. Adhesive systems such as double side tape can be easily used instead of the angled slots to hold a picture in the picture carrier.

Referring next to **Figures 7 and 8**, there is shown one preferred embodiment of the display sleeve **53A**. The display sleeve has two opposing channels **55** that are connected to one another by a web **59** that are separated from one another the proper distance to receive a picture module **31A**. The display sleeve may also have interference ribs **57** which act to restrict the movement of the picture modules in the display sleeve.

**Figure 8** shows the display module **61A** which is comprised of a display sleeve **53A** and three picture modules **31A**. The arrow **60** indicates how picture modules **31A** slide into the display sleeve **53A**. The dimensions of the display sleeve vary depending on the number and size of the picture modules to be placed inside it. Generally its length is a multiple of the length picture modules it is intended to hold. **Figure 8** shows a specific picture module being used with a display sleeve **53A**; however it should be noted, that generally, all embodiments of the picture module can be freely interchanged with all embodiments of the

display sleeve. Furthermore, other embodiments of the display sleeve which are disclosed below are derivatives of the embodiment shown in **Figure 7**.

Referring next to **Figures 9 to 12**, there is shown a plurality of display modules **61A** used in combination with a display stand **63**. Referring in particular to

5 **Figures 11 and 12**, there is shown the preferred embodiment of a fold up display stand **63**. The display stand has scores **65** and tabs **79** which allows the stand to be made from a sheet material and then be folded and locked into a three dimensional form. Copolyester plastic 0.06 in. thick die cut using steel rule dies has been found to work suitably. The tabs **79** are formed internally by cutting through the material to create the required shape **73**. At  
10 the time of assembly the locking part of the tabs **69** are held in place by snapping them through the holes **67**. Ledges **71** provide a means to support display modules with the ideal spacing and orientation. The display stand can have any number of ledges. The exact configuration and dimensions can be readily be determined by someone skilled in the art.

15 It should be appreciated that the display stand can also be made in alternative materials and configurations. For example suitable stands can be made from thermoformed sheet plastic, fabricated sheet metal, injection molded plastic or bent wire to name a few.

Referring next to **Figures 13 and 14**, there is shown a second preferred  
20 embodiment of the display sleeve **53B**. This embodiment of the display sleeve is exactly the same as the first embodiment shown in **Figure 7** and disclosed above except for the addition of a front leg **78** and a rear leg **80** which provide a self-supporting base. The legs are sized and located in such a manner so as to tilt the display sleeve and thereby placing its centre of gravity at a point approximately midway between the points of contact  
25 between the legs and the horizontal surface the display sleeve is resting on to ensure stability. **Figure 14** shows the display module **61B** which is comprised of a display sleeve **53B** and three picture modules **31B**. It will be appreciated that there are many equally functional configurations for a self-supporting base and these configurations are claimed herein.

30 Referring next to **Figures 15 to 22**, there is shown a third preferred embodiment of the display sleeve the **53C**. This embodiment of the display sleeve

provides the ability to physically link or connect display sleeves one to another so a plurality of display sleeves can be easily attached to a supporting surface such as a wall

81. This embodiment of the display sleeve is exactly the same as the first embodiment shown in **Figure 7** and disclosed above except for the addition of 2 additional narrow

5 channels **91** and a standoff rib **87**. These are best viewed by referring to **Figure 21**. Individual display sleeves are joined together using the connector **85**. During assembly the display sleeves are first butted together and then the connector is slid over them. Referring now to **Figures 21 and 22** in particular, the leg **109** of the connector fits into to the channel **91** of the display sleeve and similarly leg **89** of the display sleeve fits into to the channel

10 **111** of the connector. The gap **113** between the 2 channels of the connector is equal to double the wall thickness of the display sleeve at the bottom of the channel **91**. A web **107** separates the two channels **111** of connector the required distance. The length of the connector will vary depending on the length of the display sleeves to be connected. The connector can be made from a variety of materials including rigid PVC plastic or thin gauge

15 steel which has been treated to have spring-like qualities.

Referring in particular to **Figure 19**, there is shown one preferred embodiment of the wall support **83A** that is used to connect an assemblage of display modules **61C** to a supporting surface **81**. The leg **97** of the wall support fits into the channel **91** of the display sleeve **53C**. The leg **97** is offset from the rear surface **100** of the wall support to provide

20 clearance for the connector **85**. The standoff rib **87** located at the midpoint on the rear surface of the web **59** of the display sleeve **53C** functions to maintain an assemblage of display modules **61C** the proper distance from a vertical surface **81**. The wall support can be secured to a vertical surface using mechanical fasteners or adhesives. A V-shaped groove **95** is located opposite the rear surface **100** to provide a convenient means for

25 centering a twist drill bit when drilling holes through the profile when mechanical fasteners are used to attach it to a supporting surface. Small reinforcement ribs **93** located on either side of the V-groove provide additional strength in the area under the heads of mechanical fasteners. The length of the wall support is slightly less than the length of the top most display module in a assemblage.

30 Referring in particular to **Figure 20**, there is shown a second preferred embodiment of the wall support **83B**. This preferred embodiment is used to attach an

assemblage of display modules to a typical office partition/wall system. The channel shape formed by the base 101 and legs 103 and 105 is sized to hook on to the standard panel of the partition/wall system. The leg 97 of the wall support fits into the channel 91 of the display sleeve 53C in a manner similar to wall support 83A disclosed above.

5 Referring next to **Figures 23 to 24**, there is shown a fourth preferred embodiment of the display sleeve 53D. This embodiment of the display sleeve provides for direct attachment to a supporting surface such as a wall 81. It is exactly the same as the first embodiment shown in **Figure 7** and disclosed above except for the addition of 2 additional ribs 117 and 2 sets of centering grooves 95 and reinforcement ribs 93. The  
10 purpose and configuration of the centering grooves 95 and reinforcement ribs 93 is exactly the same as disclosed above for the wall support 83A. The addition of ribs 117 provides clearance 115 for the heads of mechanical fasteners 119 used for attaching the display sleeve 53D to a supporting surface. This allows the picture modules to move unobstructed while concealing the mechanical fasteners. It should be appreciated that a plurality of this  
15 preferred embodiment of the display sleeve can be attached to a supporting surface such as a wall 81.

Referring next to **Figures 25 to 26**, there is shown a fifth preferred embodiment of the display sleeve 53E. This embodiment of the display sleeve provides an adaptable display sleeve for direct attachment to a supporting surface such as a wall 81. It  
20 is essentially the receiving channel portion of display sleeve 53D disclosed above. Two equal lengths of display sleeve 53E are attached to a supporting surface 81 separated a distance appropriate for the picture modules to be displayed. The advantage of this embodiment of the display sleeve is the ability to accommodate any size picture module without the need to manufacture specific size profiles. The disadvantage is that more skill  
25 is required by the end user.

Referring next to **Figure 27**, there is shown a sixth preferred embodiment of the display sleeve 53F. This embodiment of the display sleeve is produced from a monolithic material such as wood and can have a channel 55 machined directly into it.

Referring next to **Figure 28**, there is shown a picture plaque. The backer  
30 board 123 can be of any shape and size. It can be made using any suitable material; 3/8 inch MDF board is one example. Display modules 61D are mounted on to the backer

board using any convenient method such as mechanical fasteners or adhesives. It should be appreciated that other embodiments of the display module such as 61A or 61E can also be used. The graphics can be directly applied to the backer board using a method such as silk screen printing or alternatively the graphics can be printed on a separate material like

5 plastic film and then applied to the backer board. There are many existing means for hanging plaques that are well known to the art. As the picture plaque is intended to be displayed on a wall, one or more of these means can be easily incorporated into the rear surface of the picture plaque.

From the foregoing, it is apparent that the basic elements are simple in

10 construction, yet provide the basis for a diverse picture display system, lending itself to economic mass production techniques. The specification and drawings are merely illustrative of the invention and are not intended to limit the invention to the disclosed embodiments. Reasonable variations and changes are possible within the scope and nature of the invention which is defined in the appended claims